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A Study of the Perfume Industry of Kannauj District under the One District One Product (ODOP) Programme

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Abstract

Kannauj is India's best-known traditional attar cluster. However, there is little information about its further development in the One District One Product (ODOP) initiative of Uttar Pradesh, and most of what is available is scattered in policy and institutional documents. Using a descriptive-analytical design of secondary data, this study analyzed MSMEs of the cluster, as well as examined export promotion and value addition, and the production and assessment of technology and process upgrading. This evidence was supported by data from Invest UP, Kannauj Export Action Plan, Intellectual Property India, FFDC, and other contemporary studies. A series of data from FFDC for the years 2018-19 to 2023-24 were subjected to a variety of descriptive and inferential statistics. The official data indicates 375 units of perfumery/allied units in active status and indicates there are 25,000 to 30,000 direct and indirect employment opportunities. In 2020-21, there was a 37.7 percent decline in the FFDC trainees; this, however, increased by 20.5 percent in 2023-24. Women's participation in the training also improved, moving from 26.1 percent to 44.1 percent of the trainees. The number of training programs increased by an average annual growth rate of 1.7 percent, and the number of training program participants by 9.4 percent. Evidence of exports indicates a growing market. However, the evidence for Kannauj does show inconsistency for the post-ODOP phase. This study shows that the ODOP phase has indicated a focus on skills and market improvement. For more effective impact assessment, enterprise and export data at the district level are required.

Keywords: Perfume industry; One District One Product; ODOP; MSMEs; export promotion

1. Introduction

Kannauj functions as an active MSME cluster alongside being a heritage craft center. Kannauj's attar is associated with the deg-bhapka hydro-distillation system and family-based production, and it shapes the product's cultural and commercial identities (Prakash, 2021; Shukla, Mukherjee, & Middendorf, 2024). Kannauj Perfume is also a certified Geographical Indication (GI). The official record states certificate no. 203 and is valid until 8 February 2029 (Intellectual Property India, 2022).

Scale and market power are not guaranteed by heritage value. Production requires considerable investment in materials, with strict standards for quality and certification, and gaps in branding and packaging. Due to the numerous competitors in synthetic fragrances, the ODOP program was launched by the Government of Uttar Pradesh in 2018 with the intent to provide support for district products via financing, training, and the provision of common facilities as well as marketing. The 2020-25 Export Promotion Policy further emphasizes GI, district export cells, capacity building, and e-trading (Government of Uttar Pradesh, 2020a), reinforced by the state's broader Industrial Investment and Employment Promotion Policy (Government of Uttar Pradesh, 2022). In this context, for Kannauj, the challenge of modernization is to enhance the region's economic competitiveness without undermining the integrity of natural attar.

Kannauj statistics are heterogeneous; some count attar manufacturers only, and others include essential oil and associated fragrance units; market surveys report different turnover and export numbers. It is necessary to assess the heterogeneity of statistics, as it is impossible to build a synthetic representative dataset. This study attempts to establish a transparent framework for the utilization of secondary data, with statistics being employed in a consistent manner over a defined, longitudinal period.

2. Review of Literature

2.1 ODOP and Local Economic Development

According to Tripathi and Agrawal (2021), ODOP is a district-centric employment, export, and local economic growth revitalization initiative, and they discuss some issues with the initiative's implementation. Misra, Maurya and Tewari (2021) similarly argue that product-centric policies utilize already established local production and marketing systems. Gaur (2023) contextualizes ODOP in the Districts as Export Hubs and highlights trade intelligence, infrastructure, and cooperative structures for small producers. Yadav and Tripathi (2022) similarly document how ODOP strategies have been extended to strengthen handicraft-based local economies through a proposed Global Handicraft Index.

2.2. MSME Development and Enterprise Formalization

Formalization is crucial as micro and family-based firms particularly face the dual challenge of funding and compliance. Udyam Registration, in place from July 2020, introduced a unified MSME registration system (Ministry of Micro, Small & Medium Enterprises [MSME], 2020). The Standing Committee on Commerce also identified lack of credit and poor access to trade information as barriers to district exports (PRS Legislative Research, 2022). In Moradabad, Sharma and Kumar (2024) suggest that combining institutional and market support can enhance an ODOP cluster, although their study focused on primary data.

2.3 Export Promotion and Value Addition

The ODOP framework for export promotion aims to shift producers from a bulk sales mode to value-added sales, including branding, packaging, compliance, and access to sell in markets. Nagrath and Grover (2024) connect ODOP crafts competitiveness, e-commerce, and sustainable positioning, while Singh, Gangal, and Gogia (2025) undertake a trend analysis and find positive export trajectories for certain districts in Uttar Pradesh. The Uttar Pradesh Export Promotion Policy 2020-2025 and the national ODOP-DEH framework systematize district export initiatives and market development efforts (Government of Uttar Pradesh, 2020a; Press Information Bureau, 2023).

2.4 Kannauj Perfume Industry and Traditional Knowledge

The studies on Kannauj invariably mention the interplay between resilience and structural barriers. Prakash (2021) cites the significance of business networks; Sharma and Srivastava (2022) cite finance, technology, and export dynamics of the ODOP; while Shukla et al. (2024) state that the market value of ittar is determined by its heritage and indigenous techniques. Modernization should focus on the demand for ittar, particularly on its quality and business potential, while retaining the craft's characteristics that allow for differentiation.

2.5 Technology, Skill Development and Quality Upgradation

The principal public technology-development organization of Kannauj, the Fragrance & Flavour Development Centre (FFDC), offers various services such as processing, testing, and the development of fragrances, as well as training and consultancy (FFDC, 2020, 2021, 2022, 2023, 2024). The ODOP Training and Toolkit Scheme has embedded structured skill and toolkit interventions (Government of Uttar Pradesh, 2020b). These initiatives facilitate incremental technical improvements without the traditional deg-bhapka process being completely dispensed with.

3. Research Gap

Descriptions of the Kannauj sector are plentiful, but there is a lack of public enterprise-level panels that correlate the various dimensions of ODOP support, such as turnover, exports, and profits, as well as the adoption of modern technologies. Integrating verified cluster, marketplace, and FFDC documentation, this study sticks to definitions of sources that are not compatible and, to a limited degree, will use inferential statistics on an FFDC time series.

4. Objectives of the Study –

1. To review the existing literature.
2. To identify the perfume manufacturing firms registered under the ODOP scheme in Kannauj district, Uttar Pradesh
3. To study the production process and the extent of technological upgradation among selected attar manufacturing enterprises in Kannauj district

5. Research Methodology

5.1 Research Design and Study Area

This study uses a descriptive and analytical research design based on secondary (already published) data, focused on Kannauj district. It is also longitudinal in nature, meaning it looks at data across several years rather than just one point in time.

The main study period is FY2018-19 to FY2023-24 this six-year window was chosen because it falls after the ODOP scheme was implemented, and because FFDC provides continuous, verified yearly data for this exact period, making year-on-year comparison possible.

In addition to this six-year series, the study also includes three separate snapshots from 2021, 2024, and 2025 that describe the current structure of the cluster and the market. These snapshots come from different sources and cover different scopes, so they are used only to describe the present situation, not as part of the continuous yearly trend.

5.2 Data Sources and Variables

Data were collected from Invest UP, the Kannauj Export Action Plan, Intellectual Property India's GI register, FFDC annual reports, Uttar Pradesh and central policy documents, and published peer research for the years 2020 to 2025. Quantitative variables included number of courses, trainees and women trainees, MSME and total units assisted, number of tests, job-work revenue, number of enterprises, employment, and market and export as well as the employment and exports.

5.3 Statistical Procedures

Means, medians, sample standard deviations, ranges, and coefficients of variation were computed. Year-on-year growth was computed as $[(\text{current} - \text{previous})/\text{previous}] \times 100$; CAGR was computed as $[(\text{ending}/\text{beginning})^{(1/n)} - 1] \times 100$; and indices were set with FY2018-19 = 100. Only the six annual FFDC observations were used to compute Pearson correlations and linear trends; due to the small sample size and the inclusion of COVID-19, p-values were interpreted in an exploratory manner.

6. Secondary Data Sources and Variables

Table 1. Verified Secondary-Data Architecture

Source	Reference period	Variables used	Analytical scope
Invest UP - Perfume Park	2025	Functional employment; infrastructure	Kannauj-specific structural snapshot
Invest UP industry workshop	2024	Export value; domestic market; unit-range statement	Kannauj-specific market snapshot
Export Action Plan of Kannauj	2021 (baseline data to FY2017-18)	Turnover; export orientation; cluster constraints	Earlier district export baseline; definitions differ from 2024
FFDC annual reports	FY2018-19 to FY2023-24	Courses; trainees; women; units assisted; testing/job-work	Institution-level service indicators; not a firm survey
Intellectual Property India	2022/current registry status	GI registration and validity	Legal/branding status

Source: Compiled by the author from the cited official sources.

7. Statistical Analysis

Table 2. Descriptive Statistics of the FFDC Longitudinal Series, FY2018-19 to FY2023-24

Indicator	N	Mean	Median	SD	Min	Max	CV
Total trainees	6	1790.33	1664.5	425.11	1414	2608	23.74%
MSME units assisted	6	549.50	488.0	171.58	419	875	31.22%
Training courses	6	72.33	72.0	16.46	55	94	22.76%
Women trainees	6	673.83	709.0	166.54	480	911	24.71%
Total units assisted	6	767.67	619.5	329.46	541	1406	42.92%

Source: Author calculations from FFDC Annual Reports (2019-20 to 2023-24, with FY2018-19 values reproduced in the five-year performance tables).

Total units assisted show the greatest relative variability (CV 42.92%), while training courses are more stable (CV 22.76%). The mean of 1,790 trainees per year is influenced by a 2019-20 peak and the subsequent pandemic shock.

8. Results and Analysis

8.1 Objective 1: Identify of MSMEs in the Kannauj Perfume Cluster

Invest UP's 2025 project profile lists 375 functional units in the broad Kannauj perfume/allied ecosystem and 25,000-30,000 direct and indirect jobs. The 2021 Export Action Plan used a narrower definition of about 250 attar-manufacturing MSMEs, while a 2024 official workshop statement referred to roughly 350-500 perfume units. These values reflect different scopes and should not be converted into an enterprise growth rate.

Table 3. Verified Profile of the Kannauj Perfume/Attar Cluster

Indicator	Verified value	Reference	Interpretive note
Functional perfume/allied units	375	2025	Broad perfume, essential-oil and allied-product ecosystem
Direct + indirect employment	25,000-30,000	2025	Official current project profile estimate
Attar-manufacturing MSMEs	About 250	2021 plan	Narrower attar cluster definition
Perfume-unit range	350-500	2024	District workshop statement
Perfume Park area	30 acres	2025	Cluster infrastructure at Kannauj
Kannauj Perfume GI	Registered; valid to 08-02-2029	GI registry	Application 157; certificate 203

Source: Invest UP (2024, 2025); Ernst & Young LLP (2021); Intellectual Property India (2022).

The data continues to support a large MSME-based fragrance cluster with specialized infrastructure and GI status. For family-run units, Udyam formalization and access to institutional finance are significant to obtaining credit, certification, and entry in the export market (Ministry of MSME, 2020, 2024).

8.2 Objective 2: Export Promotion and Value Addition

The Export Action Plan indicated approximately Rs 790 crores of cluster market/turnover for FY 2017-18 with around 30% export orientation. A previous benchmark for FY2014-15, of approximately Rs 650 crores, indicated a 21.5% increase, with an estimated 6.7% CAGR, prior to the implementation of ODOP. The Action Plan also included branding, packaging, certification, and buyer linkages for greater value addition (Ernst & Young LLP, 2021).

A 2024 invest UP announcement states Rs 55-60 crores worth of exports of perfumes/essential oils with a domestic market of Rs 600 crores. A continuum with the FY 2017-18 export share of 30% cannot be established as the data did not specify product coverage or the definition of turnover. While the rationale is defensible, export enhancement continues to be important with no consistency on the annual Kannauj export estimates.

Table 4. Export and Market Benchmarks: Values and Comparability

Benchmark	Verified figure	Source	Data-integrity interpretation
FY2014-15 turnover	~Rs 650 crore	Export Action Plan	Historical baseline
FY2017-18 market/turnover	~Rs 790 crore	Export Action Plan	~21.5% cumulative rise from FY2014-15; ~6.7% CAGR
FY2017-18 export orientation	~30% of turnover	Export Action Plan	Scope defined by 2021 district plan
2024 exports	Rs 55-60 crore	Invest UP workshop release	Perfumes and essential oils; current snapshot
2024 domestic market	~Rs 600 crore	Invest UP workshop release	Not a denominator for an export-share calculation

Source: Ernst & Young LLP/ODOP Cell (2021) and Invest UP (2024). Figures are reported as separate source-defined benchmarks, not a continuous series.

Branding of Geographical Indications (GIs), District Export Committees (DECs), Business-to-Business (B2B) linkages, and various forms of assistance, capacity building, and market development initiatives improve the upgrading of value-based production chains (Government of Uttar Pradesh, 2020a; Press Information Bureau, 2023). The high-value route for Kannauj, therefore, relies on the branding of natural attar along with certification, improved packaging, and direct market access, as opposed to natural attar bulk intermediaries.

8.3 Objective 3: Upgradation of Production Process and Technology

Deg-bhapka is the technology of heritage distillation that defines the production process. Upgrading in the cluster aligns best when it complements processes like energy handling, raw-material fractionation, laboratory analysis and testing, and quality control, coupled with innovations in packaging and product design, while preserving the essence of traditional distillation (Shukla et al., 2024). Annual Reports of the FFDC provide quantitative data on the extent of the institutional support for this process.

Table 5. FFDC Training and Enterprise-Assistance Indicators

FY	Courses	Trainees	Women	Women %	MSMEs assisted	Total units assisted
2018-19	79	1838	480	26.1%	875	1406
2019-20	94	2608	911	34.9%	591	838
2020-21	55	1625	483	29.7%	456	541
2021-22	55	1553	711	45.8%	520	636
2022-23	65	1414	707	50.0%	436	582
2023-24	86	1704	751	44.1%	419	603

Source: Author compilation/calculation from FFDC Annual Reports, FY2018-19 to FY2023-24.

Figure 1. FFDC total trainees trained, FY2018-19 to FY2023-24

Source: Author's chart based on FFDC Annual Reports.

Figure 2. FFDC MSME units assisted, FY2018-19 to FY2023-24

Source: Author's chart based on FFDC Annual Reports.

Figure 3. Women as a percentage of FFDC trainees

Source: Author calculation based on FFDC Annual Reports.

COVID-19 had a significant impact on training, consistent with the broader lockdown-driven disruption documented across the Indian handicraft and MSME sector (Yadav, Tripathi, & Tripathi, 2023): trainees peaked at 2,608 in FY2019-20, then dropped by 37.7% in FY2020-21, and then, in FY2023-24, increased by 20.5% to 1,704. The 5-year trend from FY2018-19 to FY2023-24 had a negative CAGR of -1.5% for trainees and a positive CAGR of 1.7% for training courses. Females increased from 480 (26.1) to 751 (44.1%) and had a CAGR of 9.4%.

Table 6. FFDC Testing and Job-Work Service Indicators

FY	Tests undertaken	Testing revenue (Rs lakh)	Job-work revenue (Rs lakh)
2019-20	1333	34.11	2.13
2020-21	897	27.84	2.13
2021-22	894	34.78	73.97
2022-23	1146	60.77	96.67
2023-24	887	21.79	125.55

Source: FFDC Annual Reports 2019-20 to 2023-24. These are FFDC institutional service indicators and do not measure cluster-wide technology adoption directly.

Figure 4. FFDC revenue from job-work services, FY2019-20 to FY2023-24

Source: Author's chart based on FFDC Annual Reports. The sharp increase is influenced by a very low 2019-20/2020-21 base.

FFDC's job work services and testing facilities provide services that are essential to microenterprises but that would otherwise be prohibitively expensive. Job work services revenue increased from Rs 2.13 lakhs in FY2019-20 to Rs 125.55 lakhs in FY2023-24. However, because of the small denominator, using CAGR to evaluate adoption of enterprise services would be erroneous. Evidence shows the active technology-support ecosystem, rather than the extent to which modern technology is employed by firms in Kannauj.

8.4 Growth, Index and Exploratory Statistical Results

Table 7. Growth Rates and Index Numbers (FY2018-19 = 100)

FY	Trainees YoY	MSME-assisted YoY	Trainees index	MSME-assisted index
2018-19	NA	NA	100.0	100.0
2019-20	41.9%	-32.5%	141.9	67.5
2020-21	-37.7%	-22.8%	88.4	52.1
2021-22	-4.4%	14.0%	84.5	59.4
2022-23	-9.0%	-16.2%	76.9	49.8
2023-24	20.5%	-3.9%	92.7	47.9

Source: Author calculations from FFDC Annual Reports.

Figure 5. Year-on-year change in FFDC trainees

Source: Author calculation based on FFDC Annual Reports.

Table 8. Exploratory Association and Trend Statistics

Relationship	Statistic	Estimate	p-value	Interpretation
Courses vs. total trainees	Pearson r	0.760	0.080	N=6; positive association, not significant at 5%
Trainees vs. MSME units assisted	Pearson r	0.345	0.503	N=6; weak-to-moderate, statistically inconclusive
MSME units assisted over time	Linear slope	-76.6 units/year	0.038	R ² =0.698; institutional service series only
Trainees over time	Linear slope	-123.5/year	0.265	R ² =0.296; trend not significant

Source: Author calculations. No causal inference is made because N=6 and the series is institutional, aggregate, and pandemic-affected.

A positive correlation was observed between courses and trainees ($r=0.760$, $p=0.080$), although the association lacks statistical significance at the 5% level. MSME units assisted had a negative time slope of -76.6 units/year ($R^2=0.698$; $p=0.038$). This is a negative trend in the service counts of the FFDC and indicates nothing about the contraction of the Kannauj cluster or about the ODOP and its effect on the operational activities of the enterprises.

9. Discussion

The presentation of the ODOP results shows it as a framework of incremental cluster development. Kannauj is a cluster which has a high concentration of skilled labour, business networks and a developed cluster reputation (Prakash, 2021; Shukla et al., 2024). Variations in the enumeration of official units show a requirement for the development of fixed definitions of attar, perfume and related units in programme

evaluation.

The development of the export is important and yet it remains a real weakness at the district level. The 2021 document provides a baseline estimate for historical exports, and the 2024 document provides a snapshot of continuing exports. However, neither document provides a basis for an annual comparison. This reinforces the need for development of district-level trade intelligence and data frameworks (Gaur, 2023; PRS Legislative Research, 2022).

The most compelling evidence for capacity development after 2018 is in the area of institutional capacity. The FFDC continued to provide training and assistance to enterprises during the pandemic, and the proportion of women trainees increased. Shared testing and job-work facilities are accessible to micro-enterprises. Future evaluations should connect service delivery with the results of Yield, Certification, Sales under a Brand, and Entry to Export.

Therefore, Kannauj should pursue a heritage-compatible strategy: modernization of testing, packaging, design, trade, and business capabilities while securing deg-bhapka knowledge and GI authenticity. This seeks a compromise between the indigenous attributes of production (Nagrath & Grover, 2024; Sharma & Kumar, 2024).

10. Major Findings

- Invest UP's current profile notes that 375 functional perfume/allied units exist and that 25,000-30,000 direct and indirect jobs exist.
- Official enterprise counts differ depending on scope (around 250 attar MSMEs in 2021, 350-500 perfume units in 2024, and 375 functional allied units in 2025); they cannot be considered a time series.
- The district plan's benchmark for FY2017-18 was set at approximately INR 790 crores, while for FY2014-15, it was set at approximately INR 650 crores. This indicates about 21.5% overall growth and a 6.7% compounded annual growth rate (CAGR) prior to ODOP.
- According to the 2024 snapshot, exports were estimated at INR 55-60 crores, while the total value of the domestic market was INR 600 crores. This is not defined in comparison to the FY2017-18 estimate of the export share.
- FFDC's trainees decreased by 37.7% in FY2020-21, with a partial recovery of 20.5% in FY2023-24. This indicates a clear pandemic disruption, from which recovery was partially achieved.
- Women's share of FFDC's trainees increased from 26.1% to 44.1% from FY2018-19 to FY2023-24, with women trainees achieving a CAGR of 9.4%.
- Training courses increased by approximately 1.7% per annum, while total trainees achieved a negative CAGR of 1.5% during the six-year period considered in this study.
- By FY2023-24, FFDC's job-work activities increased substantially, indicating a significantly greater intensity of common services rather than a measured rate of technology adoption across the cluster.

11. Policy Implications and Suggestions

- Establish an annual data collection exercise to produce the Kannauj perfume-cluster dashboard. This will require clear definitions for the measurement of units, Udyam status, jobs, turnover, exports, and the destination of exports.
- Support and strengthen GI branding and traceability to ensure that Kannauj Perfume is noticeably differentiated from unbranded and synthetic substitutes in both domestic and export markets
- Combine Perfume Park and FFDC services for testing, packaging, pilot processing, certification, design,

and export documentation to lower the micro units' fixed costs.

- Provide export-readiness support via buyer-seller meets, e-commerce, trade fairs, and packaging standards, and measure enterprise-level results.
- Focus on heritage-compatible technology - energy efficiency, fractionation, analytical testing, and quality- and keep deg-bhapka know-how.
- Associate outcomes from ODOP finance/Udyam formalization with certification, first export, employment, and product launch.
- Maintain specialized skill development for women/ new entrepreneurs based on the increased number of women attending training.
- Develop linkages for sustainable sourcing of aromatic raw materials to lower input costs and keep more value in the district.

12. Limitations of the Study

Public secondary data are inconsistent. There is no authenticated annual Kannauj panel that has covered ODOP assistance, firm turnover, exports, profits, or the adoption of any technology. The number of units varies with each study, and the export projections for 2021/2024 are not aligned. The FFDC data describe the activities of the institution and are not probability samples of the Kannauj attar firms; the six-year period has also been pandemic-affected. Therefore, correlation and trend analysis will remain largely descriptive. Future studies will have to incorporate anonymized Udyam, GST, customs, and a beneficiary survey at the enterprise level.

Kannauj illustrates that scaling up a heritage industry through cluster policy exemplifies the importance of maintaining its distinctive value. Documented evidence shows a well-developed perfume-related MSME ecosystem, GI protection, purpose-built infrastructure, and a technology-development centre. ODOP and corresponding export policies offer access to finance, skills, branding, and markets. FFDC data indicate that capability development persisted after 2018, during the pandemic, and that there was a notable increase in the training of women. That said, the data provide no basis for estimating a direct and positive impact of ODOP on the profitability of firms, or a sustained increase in exports from Kannauj. Thus, the most reasonable conclusion is that there was gradual upgrading of firms, with support from government policies, rather than an impact from specific programs. A blend of heritage-compatible modernization and increased measurement should be adopted. This would include clear and stable definitions of enterprises, annual estimates of exports, and evidence of formalization, certification, and sales, as well as training, linked to specific outcomes. This evidence may allow Kannauj to evolve from a traditional aromatic-input cluster to a recognized global natural-fragrance ecosystem.

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Data-integrity note. *No primary respondent survey was created for this paper. All numerical findings are either directly traceable to the listed secondary sources or are author calculations from the reported source values. Incomparable source definitions were retained as separate benchmarks rather than forced into artificial time series.*

